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XXXVII. *Extract of Two Letters from the late Capt. Alexander Rose, of the 52d Regiment, to Dr. Murdoch, F. R. S.*

FROM LETTER I.

Madras, 20 Sept. 1768.

Read July 5, * * * * *
1770.

WE arrived here the 15th of this month; at first setting out, we had bad weather, having been driven by a contrary wind upon the coast of Portugal. From thence we took our departure for the Canaries; where I had an opportunity of gratifying my curiosity by a sight of the famous Pic of Teneriffe. About ten days after, we made the Cap de Verde-Islands; and, by a mistake of the Captain (which I was glad had happened), sailed close by the island del Fuego, famous for its volcano, which we saw in its perfection, and which fully comes up to Virgil's description of Mount Ætna. We had no sooner lost sight of the Cap de Verdes, than we were overtaken with a storm, which lasted a considerable time, and were near driven upon the coast of Brasil. But the storm abating, and the wind coming fair for a month or more, we had a speedy voyage to the Cape of Good Hope, where we were plentifully supplied

supplied with every thing we could wish for our refreshment, after so long a voyage. The climate and country there are so good, that the trees, fruits, and vegetables, both of the hot and the cold climates, flourish and thrive in the greatest perfection. The Dutch there, are just the same kind of people they are in Holland : so that, for variety's sake, I took a jaunt to the Hottentots crawl-ships, which I had a great curiosity to see. I found Kolben's account of them to be, in general, very just. He takes no notice, however, of their music, which I found to be very tolerable ; their chief instrument being a large cocoa nut-shell, strung with guts, and somewhat resembling a guittar. I am convinced they have always had a belief of one Supreme Deity, and other subordinate ones, as also of a future state.

We found, by exact and repeated observations, that the variation of the needle, at the Cape, was $19^{\circ}\frac{1}{2}$; though, in the latest Variation-chart, it is laid down at 18° .

We left that place the 20th of July ; and during our long voyage to India, I frequently amused myself with microscopical observations, of which I shall give you some account ; because, for what I know, some of them may not have fallen under the notice of the writers on this subject, who make no mention of that species of *animalcula*, which swarm in the atmosphere of the immense ocean, their proper element.

As I could find no great variety of objects on board the ship, I endeavoured to produce *animalcula*, by the common methods (by pepper-water, hay, &c.);

&c.); but finding they did not answer my purpose, I tried fresh-water alone, which I exposed to the open air for two days, and upon examining found a good number of *animalcula*; but they soon languished and died. I afterwards exposed the fresh water for two hours only, and found some in it, which lived but a very short time. I therefore resolved to try sea-water, which, having been exposed to the open air, in a very short time, swarmed with *animalcula*; these, upon the strictest examination, I found to be exactly of the same species with those of fresh water: only they seemed much more active and lively, and instead of dying in a short time, as those of the fresh water, they continued to increase and thrive wonderfully, the longer I kept them. I then removed some of them out of the salt into the fresh water; but they soon languished and died. Whence I conclude them to be a quite different species from what we find upon, or near, the land. I began my experiments about ten days after we lost sight of land, and continued them the whole voyage; so that, with the help of some books, I passed my time very agreeably.

I had provided myself with a thermometer, to measure the degrees of heat and cold, in the different climates we were to pass through; and found the mercury to rise from 55 to 80° of Fahrenheit's scale: which last it never exceeded, though we were sometimes becalmed between the tropics, and upon the line. This degree of heat I have often experienced in Canada, as I dare say you sometimes have in England.

When I have any thing worth communicating from this part of the world, I shall not fail to acquaint you with it.

FROM LETTER II.

Muxadabad, in Bengal,
20 August, 1769.

SOON after my arrival in Bengal, I was appointed, by the governor, surveyor of the company's lands, and ordered to survey the provinces to the North and North East, as far as Napal; for which I set out in November last, accompanied with a military force; as there was reason to believe the mountaineers would obstruct the survey. Having finished this work, I dismissed the troops; and desired the Raja of Napal would give me leave to visit his country, attended only by a few servants; which he with some difficulty granted.

The country of Napal is a large flat, surrounded with three ranges of almost inaccessible mountains, which are covered with snow all the winter, and a great part of the summer: so that, when every thing on the plains of India is almost burnt up with excessive heat, the natives of those mountains enjoy a cool temperate air. They are a very different species of people from the inhabitants of the plains. Their complexions are olive, their features broad and flat;
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and their persons short and strongly made : they profess the Gentoo religion ; but differ from them, in that they sacrifice, and eat most kinds of flesh, excepting that of the cow and of the hog. Their language is the Nagri, which I have good reason to believe was the original language of India, and is more ancient than even the Shanscritta ; which I imagine to have been formed and invented by the Bramins, in order to veil their religion from the vulgar. There are at present two dialects of the Nagri, one of which is not very common, and is called the Bengal ; but this is understood by only a very few, and may be called the ancient Nagri ; and the other the modern. I found many manuscripts among the mountaineers, some of which treat of the history of India, going back above three thousand years. And I am convinced, that, to come at the true history of the early times of this country, recourse must be had to the books written in this language. I am now endeavouring to get some of them translated.

This country has never been visited by any Europeans, but a few Italian missionaries who have lately been driven out of it. I happened to meet with them by accident, and flattered myself I should receive some useful information from them ; but was much disappointed, for they were a set of the most ignorant fellows I ever met with. Their superior, who seemed the most intelligent, could give me no account of any place or thing beyond the city he lived in, although he had been twelve years in that country. He told me, however, by way of shewing his missionary zeal, that he had burnt three thousand
manu-

manuscripts, during his stay there. He had two miserable families along with him, which he called his converts.

I was greatly surprised to find many Chinese commodities among the inhabitants of Napal; and upon enquiry found that they now have, and, for ages past, have had, a communication with China, by the way of Tibet. In consequence of this information, I have given in proposals to the governor and council here, to trace and explore this route, and am now on my way to Calcutta upon this business. The rainy season coming fast on, I could make but a very short stay in Napal: though, in my opinion, it is one of the finest countries I ever saw. If my proposals to the government here are agreed to, and it shall please God to continue my life and health*, I hope to be able to give you an account of this, and many other countries through which I must pass before I reach China.

The birds and beasts I saw in the Napal mountains were—Of birds, the *mumal*, a kind of pheasant, the feathers of a fine dark brown, with red spots, and a red tuft upon the head—The *dophia*, of the peacock kind; but the comb and plumage of the neck far surpasses the peacock's; the tail is short, and of a dirty orange colour, and seems a contrast to the other plumage.—Of beasts, the sheep with four horns,

* Instead of this, the very next India ship brought the melancholy news of his death: a loss! which his family and friends must ever deplore—and which may even be reckoned a loss to the sciences, and to the public, as well as to the company, in whose service he died: as he had, so early in life, to the activity and spirit of the brave officer, united the unbounded curiosity and cool patience of the philosopher.

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and a kind of deer about the size of a lap-dog: I sent some for the governor, but they died by the way.

I am now to acquaint you, that, having procured a telescope and stop-watch, I made my observations upon the transit of Venus, which happened here on the 4th day of June, 1769.

Phefabad, lat. $25^{\circ} 30'$ north.

Observed the planet a good way	^h	[']	["]
advanced on the sun's body at	5	35	57 (app. time)
First contact at the egress	6	52	25
Last contact	7	10	47
* Time between the first and			
last contacts	0	18	22

* Whence the planet's centre was on the sun's limb at $7^h 1' 36''$; and this compared with an observation of the central egress or ingress made at a distant place will give the sun's parallax; the other necessary elements of the calculus being well established. In the mean time we see, from the *Connoissance des Temps* for 1769, that Phefabad in Bengal, where Captain Rose observed, is $81^{\circ} 45'$ east of Paris.

The watch had been regulated the preceding day, by equal altitudes of the sun; the sun's altitudes, at the two contacts, are likewise marked in the Captain's letter; but this part of the work he had probably entrusted to a less skillful observer; while his own attention was engrossed by the telescope and the watch; as I find the difference of the times correspondent, to those altitudes, does not agree with the interval of the contacts; for which reason they are here omitted.